Prognostic Model	ROC ca	Sens.	Spec.	Cost
Only clinical variables (CV)	0.79	0.42	0.95	–
CV + SDNN < 50 ms on 24-h Holter	0.79	0.42	0.98	6
CV + QRS > 110 ms on SAECG	0.82	0.79	0.71	1.5
CV + usVT on 24-h Holter	0.84	0.63	0.85	6
CV + LVEF < 0.40 on 2d-echo	0.84	0.68	0.82	7.7
CV + exercise test (ET) variables	0.87	0.74	0.90	5
CV + ET variables + LVEF < 0.40	0.88	0.74	0.93	12.7
CV + ET variables + QRS > 110 ms	0.89	0.68	0.96	6.5

When a single diagnostic test was added to CV (previous MI, age >60 yrs, thrombolysis), ET variables (no eligibility to ET, ET interruption because of dyspnea or pressure drop, ST depression ≥3 mm and peak systolic pressure <145 mmHg) provided the greatest prognostic information. When a 2nd diagnostic test was added to CV and ET, LVEF on 2d-echo or QRS duration on signal-averaged ECG (SAECG) had slight but still significant additional prognostic value while Holter variables did not. After MI in the thrombolytic era no more than 2 noninvasive tests (ET + 2d-echo or SAECG) are required for risk stratification. Combined use of ET and SAECG was the most cost-effective stratification strategy.

992 Stents: Optimal Application/Multiple Stents

Tuesday, March 18, 1997, Noon–2:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: 1:00 p.m.–2:00 p.m.

992-19 Balloon to Artery Ratio, Not Inflation Pressure, Correlates with Adequate Palmaz-Schatz Stent Deployment: Is High Pressure Inflation Necessary?

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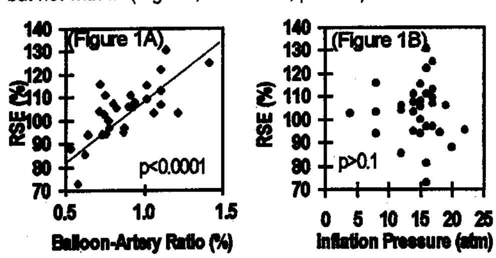
Background: Although high pressure inflation after Palmaz-Schatz stent (PS) implantation has been employed to achieve optimal stent deployment, it is not clear whether this is due to bigger balloon size or more radial force generated by high pressure inflation. *Methods:* Thirty two patients (33 arterial segments) who underwent PS implantation and intravascular ultrasound (IVUS) were studied. In each case, on-line QCA data was used to select the best size balloon for post-stent inflation. Final inflation pressure (IP) was left to the operators' discretion. After PS implantation and post-stent inflation, IVUS was performed to measure the vessel dimensions and assess the adequacy of stent deployment by several indices including relative stent expansion (RSE = Stent cross sectional area/Mean reference luminal area, reported in percentage). *Results:* IP and balloon to artery ratio (BAR) ranged widely from 4 to 22 atms (Mean = 14.7 ± 0.6 atms, SE) and 0.73 to 1.31 (Mean = 1.03 ± 0.02 mm), respectively. Resultant RSE also varied widely from 44.0 to 141.7% (Mean = 86.7 ± 3.9%), representing poor to good deployment. Stepwise linear regression analysis revealed that RSE is correlated most strongly with BAR (Fig. 1A, Correlation coefficient = CC = 0.76, p < 0.0001), but not with IP (Fig. 1B, CC = 0.13, p < 0.1).



Conclusions: BAR is the most critical determinant of adequate stent deployment. IP may not be important to achieve adequate stent deployment as long as an adequate BAR is maintained.

992-20 Effect of High Pressure Balloon Dilation Upon the Deployment of Different Coronary Stents – An In Vitro Study Using Direct Magnification Radiography

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It is well known that high pressure balloon dilation results in a further increase of both lumen diameter and cross-sectional area of coronary stents. Aim of this study was to compare three second generation stent types [Johnson & Johnson Cordis PS 154A (PS), ACS Multi Link (ML) and Scimed NIR] regarding the influence of the inflation pressure upon the stent expansion and to estimate their acute recoil. The stents were implanted with 6 Bar in silicone-rubber tubes of 3.2 mm diameter and concentric narrowing with compliance simulating a rigid and elastic coronary stenosis. Successive dilations were then performed using a non-compliant 3.5 mm balloon with 9, 12, 15, 18 and 21 Bar. The stents were scanned after each dilation using direct magnification radiography, which provides a 0.03 mm spatial resolution and is therefore accepted as a gold standard in vitro. The minimal lumen diameter (MLD) and the calculated stent recoil (recoil = 1 – MLD/inflated balloon diameter) were determined for each dilation step and expressed as mean ± SD. Statistical analysis was performed using a two-tailed Student t test with 95% confidence interval.

Stent	n	MLD (mm)			% Recoil		
		9 Bar	21 Bar	P	9 Bar	21 Bar	P
ML	3	3.23 ± 0.14	3.29 ± 0.06	n.s.	11 ± 5%	13 ± 2%	n.s.
NIR	3	3.15 ± 0.12	3.29 ± 0.07	n.s.	16 ± 3%	16 ± 0%	n.s.
PS	3	2.99 ± 0.13	3.10 ± 0.17	n.s.	19 ± 3%	19 ± 4%	n.s.

In this stenotic model high pressure balloon dilation (>9 Bar) failed to increase significantly the MLD of all stents. However, NIR and Multi Link had a significant larger MLD than Palmaz-Schatz at each dilation step (P < 0.001) due to their lower recoil, which proves the higher radial strength of these stent types.

992-21 Side Branch Occlusion Following High Pressure Coronary Stenting: Incidence and Angiographic Predictors

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To delineate predictors of side branch occlusion (SBO) in the era of high pressure stenting we analyzed 331 consecutive angiograms for the presence of side branches (SB) greater than 1 mm covered by coronary stents. 224 SB in 181 lesions covered by 324 stents (270 PS, 54 GR1) were characterized. SBO (TIMI I flow) occurred in 43 (19%). Two (5%) occluded after predilatation, 12 (28%) after stent deployment, 29 (67%) after post stent dilatation using high pressures (15 ± 3 ATM). No clinical characteristics correlated with SBO.

	SBO n = 43	No SBO n = 181	p value
Threatened SB	28 (65%)	7 (4%)	< 0.01
Ulceration	21 (49%)	47 (26%)	0.05
Dissection (any)	17 (39%)	83 (46%)	0.14
Stent Design	34 (79%)	142 (78%)	0.93
Restenotic lesion	16 (37%)	35 (19%)	0.27
Bailout stent	7 (16%)	27 (15%)	0.85
SB Diameter (mm)	1.66 ± 0.44	1.70 ± 0.39	0.66

By multivariate analysis, threatened SB morphology (defined as those SB with greater than 50% narrowing at the origin arising from within the diseased portion of the target lesion) remained a predictor of SBO (OR 21 [8–50, 95% CI], p < 0.0001). *Conclusion:* The incidence of SBO after high pressure stenting is 19%. Most SBO occur after post stent dilatation using high pressures. Threatened SB morphology is a powerful predictor of SBO. Target lesion characteristics, stent type, and clinical characteristics do not correlate with SBO.